



CALS TEST NETWORK

CTN Test Report 92-004

AFTB-ID
90-005B



**Technical Publication
Transfer Test
Using Lockheed Missiles
& Space Co., General
Electric Company, and
Rockwell International**

Produced Data:

**MIL-M-28001 (SGML)
and MIL-D-28002
(Raster)**

Quick Short Test Report

2 April 1992

Prepared for

Air Force Materiel Command

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CTN Test Report
92-004

AFTB-ID-90-05B

2 April 1992

Technical Publication Transfer

Using Lockheed Missiles & Space Co.,
General Electric Company,
and Rockwell International

MIL-M-28001 (SGML)

MIL-R-28002 (Raster)

Quick Short Test Report

2 April 1992

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DISCLAIMER

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1. Introduction

1.1 Background

The DoD Computer-aided Acquisition and Logistics Support (CALS) Test Network (CTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The CTN is a DoD-sponsored confederation of voluntary participants from industry and government managed by the Air Force Logistics Command.

The primary objective of the CTN is to evaluate the effectiveness of the CALS Standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those Standards. Two general categories of tests are performed to evaluate the Standards, formal and informal. Formal tests are large, comprehensive tests that follow a written test plan, require specific authorization from DoD, and may take months to prepare, execute, and report.

Informal tests are used by the CTN technical staff to broaden the testing base by including representative samples of the many systems and applications used by CTN participants. They also allow the CTN staff to gain feedback from many industry and government interpretations of the Standards, to increase the base of participation in the CALS initiative, and to respond, in a timely manner, to the many requests for help that come from participants. Participants take part voluntarily and are benefited by receiving an evaluation of their latest implementation (interpretation) of the Standards, interacting with the CTN technical staff, gaining experience in use of the Standards, and developing increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test reported in this QSTR was to analyze Lockheed Missiles & Space Co, General Electric Co., and Rockwell International's interpretation and use of the CALS Standards in transferring technical publications data. These three companies used their CALS Technical Data Interchange System to produce data in accordance with the standards and delivered it to the CTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFTB 90-05B

**Date of
Evaluation:** 17 October 1991

Evaluator: George Elwood
Air Force CALS Test Bed
AFMC(I)/ENCT
Wright-Patterson AFB OH 45433

**Data
Originator:** Lockheed Missiles and Space Co.
Sunnyvale, CA
General Electric Company
Cincinnati, OH
Rockwell International
Cedar Rapids, IA

**Data
Description:** Technical Manual Test
1 document declaration file
1 DTD
1 TEXT file
11 Raster files

Data Source Systems:

Text/SGML
SOFTWARE
DataLogics

Raster
SOFTWARE
Anvil 5000
InterCap

**Evaluation
Tools Used:**

MIL-STD-1840A (TAPE)
SUN 3/280
CTN Tapetools (v1.2.8) UNIX
Agfa CALS Tape V40.4
Cheetah Gold 486
USLynx 1840A Tape Handler
CTN Tapetools (v1.2.8) DOS

MIL-M-28001 (SGML)

SUN 3/60

Cheetah Gold 486

Exoterica XGML V1.2e3.2

Datalogics ParserStation v3.36

MIL-R-28002 (Raster)

SUN 3/60

Rosetta Technology Preview V3.1

Cheetah

Inset Systems HiJaak V2.02

SPC Harvard Graphics V3.0

**Standards
Tested:**

MIL-STD-1840A

MIL-M-28001

MIL-R-28002

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force Test Bed enclosed in a box in accordance with ASTM D 3951. The exterior of the box was not marked with the required magnetic tape warning label, MIL-STD-1840A, paragraph 5.3.1.3.

The tape was not enclosed in a barrier bag or barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the required label indicating the recording density as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files that were recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the Air Force Test Bed contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The 1840A Tape was run through the AFTB TAPETOOL utility version 1.2.8. No errors were encountered while evaluating the contents of the tape labels.

The tape was read without problem using Agfa's read1840A tape utility.

The tape was also read without problems using the MS-DOS version of the CTN Tapetool V1.2.8.

The tape was read without problem using USLynx Tapehandler utility.

3.2.2 Declaration and Header Fields

No errors were reported in the Declaration file or any of the file headers.

4. IGES Analysis

No IGES files were included on the tape.

5. SGML Analysis

The text files from this document were tested using the Exoterica XGML parser. This program reported eleven errors with the text file. The DTD required a minor change to reflect the more current MIL-M-38784B DTD instead of the MIL-M-38784. The use of MIL-M-38784 is correct as the document was prepared to 28001 standards. The text "cals\$lib:cals.dtd" was removed from the DTD as this is unique to DataLogics Parser indicating the location of basic DTD. This text was removed and the file parsed without error.

The first error was reported on line 26. The file was missing the <LEP> tag which is required at the end of idinfo and before forward, which is the next tag. This is required in the MIL-M-38784B DTD.

```
C:\XGML\XGMLNORM.EXE --  
Error on line 26 in file \tapetool\set005\d001\d001t002.txt:  
A start tag is missing that must not be omitted.  
The element is 'LEP'.
```

Three errors were reported on line 355. The error is the use of the tag STEP1 only once. MIL-M-28001A, para. 30.4.3.5.2, says that the "*" in the DTD means that STEP1 occurs never or several times.

```
C:\XGML\XGMLNORM.EXE --  
Error on line 355 in file \tapetool\set005\d001\d001t002.txt:  
A start tag is missing that must not be omitted.  
The element is 'STEP1'.
```

The remainder of the errors relates to the lack of delimiters around the numbers in the WIDTH attribute. When these were inserted no errors were reported.

```
C:\XGML\XGMLNORM.EXE --  
Error on line 391 in file \tapetool\set005\d001\d001t002.txt:  
Missing delimiters around attribute value and SHORTTAG is NO.
```

For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="40."

6. Raster Analysis

All 11 raster images were checked using the CTN *validg4* utility. All of the files were reported as being valid raster images.

Four files were tested using Rosetta Technology's *Preview*. The images were displayed without problem and hard copies of these files were generated. These copies are included in the appendix to this report. The images displayed in good quality with the exception of file D001R013. This file was judged not usable.

The files were converted to a PCX format using Inset Systems *HiJaak*. All of the files were displayed on the screen using *Viewer*. All files, with the exception of D001R013 were acceptable. The PCX files were read into *Harvard Graphics V3.0* and printed. These images are included in the Appendix to this report.

7. CGM Analysis

No CGM files were included on the tape.

8. Conclusions and Recommendations

In summary, the MIL-STD-1840A tape from Lockheed Missiles & Space Co., General Electric Company, and Rockwell International was basically correct. The tape's basic construction was completed following MIL-STD-1840A. The errors in the 1840A were minor and should be easily corrected.

The raster images all displayed without problem. All images except D001R013 were acceptable.

The tape provided by Lockheed Missiles & Space Co., General Electric, and Rockwell International was a learning experience in the CALS area for these companies. This test tape shows that the CALS ideas are sound in that three companies were able to create, read and modify a file on different systems without major problems.

9. Appendix A - Tape Tool Report Logs

9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

Standards referenced:

- MIL-STD-1840A (1987) - Automated Interchange of Technical Information
- MIL-R-28003 (1988) - Digital Representation For Communication Of
Illustration Data; CGM Application Profile
- ANSI X3.27 (1987) - File Structure and Labelling of Magnetic Tapes
for Information Interchange
- ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Thu Oct 17 12:58:24 1991

MIL-STD-1840A File Catalog

File Set Directory: C:\TAPETOOL\SET005

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001G001	DTD	D/00260	02048/000001	Extracted
D001R003	Raster	F/00128	02048/000003	Extracted
D001R004	Raster	F/00128	02048/000003	Extracted
D001R005	Raster	F/00128	02048/000004	Extracted
D001R006	Raster	F/00128	02048/000014	Extracted
D001R007	Raster	F/00128	02048/000014	Extracted
D001R008	Raster	F/00128	02048/000014	Extracted
D001R009	Raster	F/00128	02048/000011	Extracted
D001R010	Raster	F/00128	02048/000007	Extracted
D001R011	Raster	F/00128	02048/000006	Extracted
D001R012	Raster	F/00128	02048/000005	Extracted
D001R013	Raster	F/00128	02048/000003	Extracted
D001T002	Text	D/00260	02048/000019	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release Number 8

Standards referenced:

ANSI X3.27 (1987) - File Structure and Labelling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Thu Oct 17 12:57:47 1991

ANSI Tape Import Log

Rewinding tape to load point...

VOL1CALS01

4

Label Identifier: VOL1
Volume Identifier: CALS01
Volume Accessibility:
Owner Identifier:
Label Standard Version: 4

HDR1D001 CALS0100010001000000 91290 00000 000000

Label Identifier: HDR1
File Identifier: D001
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0001
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:
Block Count: 000000
Implementation Identifier:

HDR2D0204800260

00

Label Identifier: HDR2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

***** Tape Mark *****

```
Label Identifier: EOF1
File Identifier: D001
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0001
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:
Block Count: 000001
Implementation Identifier:
```

```
Label Identifier: EOF2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00
```

***** Tape Mark *****

```
Label Identifier: HDR1
File Identifier: D001G001
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0002
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:
Block Count: 000000
Implementation Identifier:
```

Label Identifier: HDR2
Recording Format: D

Block Length: 02048
Record Length: 00260
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 1.

***** Tape Mark *****

EOF1D001G001 CALS0100010002000000 91290 00000 000001

Label Identifier: EOF1
File Identifier: D001G001
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0002
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:
Block Count: 000001
Implementation Identifier:

EOF2D0204800260

00

Label Identifier: EOF2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00

***** Tape Mark *****

HDR1D001R003 CALS0100010003000000 91290 00000 000000

Label Identifier: HDR1
File Identifier: D001R003
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0003
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:

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Block Count: 000000
Implementation Identifier:

HDR2F0204800128

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 3.

***** Tape Mark *****

EOF1D001R003

CALS0100010003000000 91290 00000 000003

Label Identifier: EOF1
File Identifier: D001R003
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0003
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:
Block Count: 000003
Implementation Identifier:

EOF2F0204800128

00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

<<<< PART OF LOG REMOVED HERE >>>>

HDR1D001T002 CALS0100010014000000 91290 00000 000000

Label Identifier: HDR1
File Identifier: D001T002
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0014
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:
Block Count: 000000
Implementation Identifier:

HDR2D0204800260

00

Label Identifier: HDR2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 19.

***** Tape Mark *****

EOF1D001T002 CALS0100010014000000 91290 00000 000019

Label Identifier: EOF1
File Identifier: D001T002
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0014
Generation Number: 0000
Generation Version Number: 00
Creation Date: 91290
Expiration Date: 00000
File Accessibility:
Block Count: 000019
Implementation Identifier:

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EOF2D0204800260

00

Label Identifier: EOF2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00

***** Tape Mark *****

***** Tape Mark *****

End of Volume CALS01

End Of Tape File Set

Rewinding tape to load point...

Tape Import Process terminated normally.

9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release Number 8

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information
MIL-R-28002 (1989) - Raster Graphics Representation In Binary
Format, Requirements For

Thu Oct 17 12:58:24 1991

MIL-STD-1840A File Set Evaluation Log

File Set: SET005

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: 256
srcdocid: NONE
srcrelid: NONE
chglvl: ORIGINAL
dteis: 19900503
dstsys: transfer aftb9005
dstdocid: NONE
dstrelid: NONE
dtetrn: 19911017
dlvacc: NONE
filcnt: G1,R11,T1
ttlcls: NONE
doccls: NONE
doctyp: CTN 1840A
docttl: CTN TEST TAPE

Found file: D001G001

Extracting DTD Header Records...

Evaluating DTD Header Records...

srcdocid: NONE
dstdocid: NONE
notes: NONE

Saving DTD Header File: D001G001.HDR

Saving DTD Data File: D001G001.DTD

Found file: D001R003

Extracting Raster Header Records...

Evaluating Raster Header Records...

srcdocid: NONE
dstdocid: NONE
txtfilid: W
figid: 1-2
srcgph: r002
doccls: UC
rtype: 1
rorient: 000,270
rpelcnt: 000627,000395
rdensty: 0200
notes: NONE

Saving Raster Header File: D001R003.HDR
Saving Raster Data File: D001R003.GR4

<<<< PART OF LOG REMOVED HERE >>>>

Found file: D001T002
Extracting Text Header Records...
Evaluating Text Header Records...

srcdocid: NONE
dstdocid: NONE
txtfilid: W
doccls: NONE
notes: NONE

Saving Text Header File: D001T002.HDR
Saving Text Data File: D001T002.TXT

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

A total of 0 error(s), 0 warning(s), and 0 note(s) were
encountered in Document D001.

A grand total of 0 error(s), 0 warning(s), and 0 note(s)
were encountered in this File Set.
MIL-STD-1840A File Set Evaluation Complete.

10. Appendix B - SGML Parser Logs

10.1 XGML Parser Log

C:\XGML\XGMLNORM.EXE --

Error on line 26 in file \tapetool\set005\d001\d001t002.txt:
A start tag is missing that must not be omitted.
The element is 'LEP'.

C:\XGML\XGMLNORM.EXE --

Error on line 355 in file \tapetool\set005\d001\d001t002.txt:
A start tag is missing that must not be omitted.
The element is 'STEP1'.

C:\XGML\XGMLNORM.EXE --

Error on line 355 in file \tapetool\set005\d001\d001t002.txt:
A start tag is missing that must not be omitted.
The element is 'PARATEXT'.

C:\XGML\XGMLNORM.EXE --

Error on line 355 in file \tapetool\set005\d001\d001t002.txt:
The start tag of an empty element has been omitted.
The element is 'PARATEXT'.

C:\XGML\XGMLNORM.EXE --

Error on line 391 in file \tapetool\set005\d001\d001t002.txt:
Missing delimiters around attribute value and SHORTTAG is NO.
For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="40".

C:\XGML\XGMLNORM.EXE --

Error on line 607 in file \tapetool\set005\d001\d001t002.txt:
Missing delimiters around attribute value and SHORTTAG is NO.
For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="40".

C:\XGML\XGMLNORM.EXE --

Error on line 650 in file \tapetool\set005\d001\d001t002.txt:
Missing delimiters around attribute value and SHORTTAG is NO.
For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="5.5i".

C:\XGML\XGMLNORM.EXE --

Error on line 671 in file \tapetool\set005\d001\d001t002.txt:
Missing delimiters around attribute value and SHORTTAG is NO.
For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="6i".

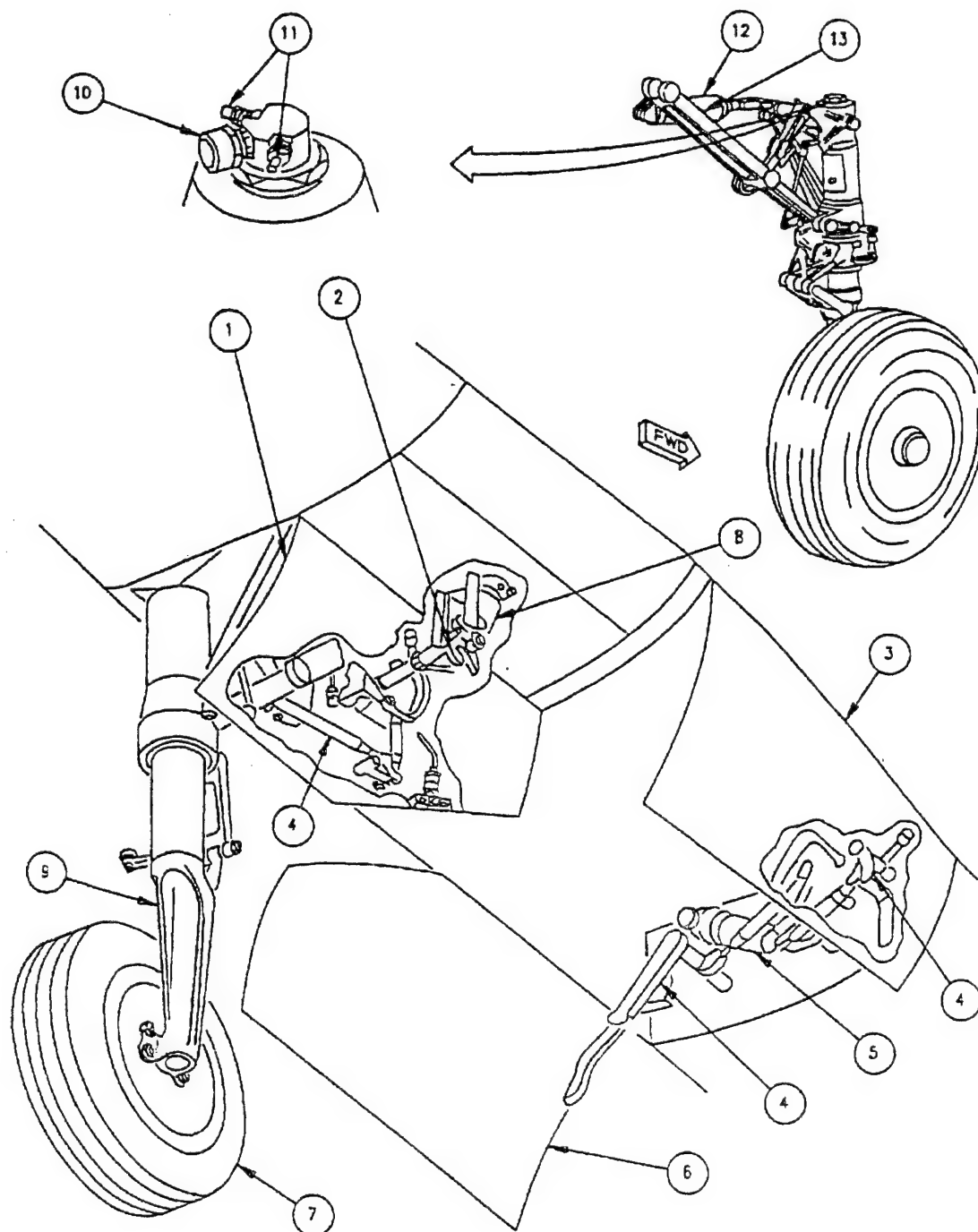
C:\XGML\XGMLNORM.EXE --

Error on line 690 in file \tapetool\set005\d001\d001t002.txt:
Missing delimiters around attribute value and SHORTTAG is NO.
For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="5.5i".

C:\XGML\XGMLNORM.EXE --
Error on line 739 in file \tapetool\set005\d001\d001t002.txt:
Missing delimiters around attribute value and SHORTTAG is NO.
For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="5.5i".

C:\XGML\XGMLNORM.EXE --
Error on line 775 in file \tapetool\set005\d001\d001t002.txt:
Missing delimiters around attribute value and SHORTTAG is NO.
For start tag 'GRAPHIC': For IMPLIED NUTOKEN attribute 'WIDTH'="3.25i".

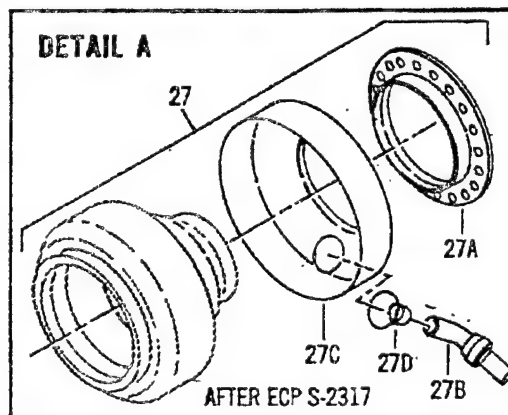
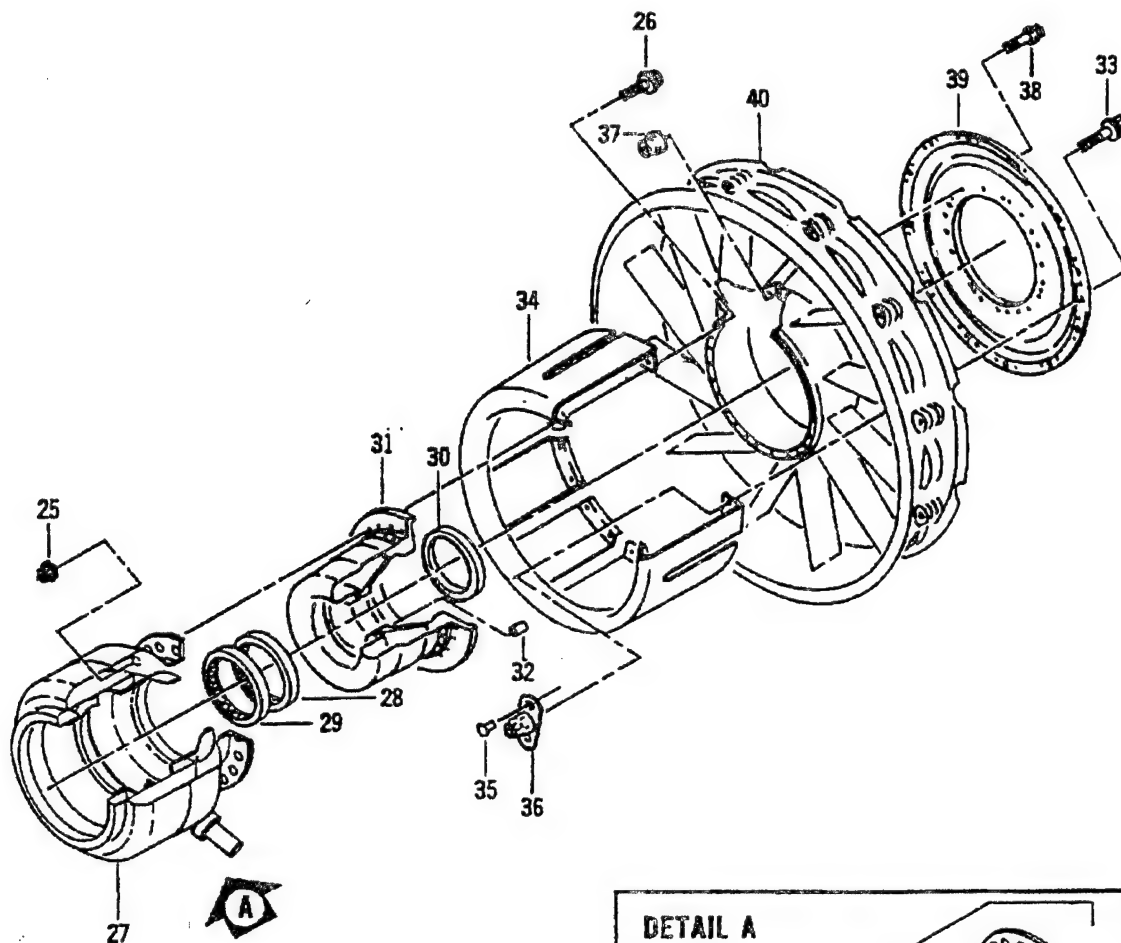
- 11. **Appendix C - Raster**
- 11.1 **Preview Hard Copies**
- 11.1.1 **D001R004**



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11.1.2 D001R005

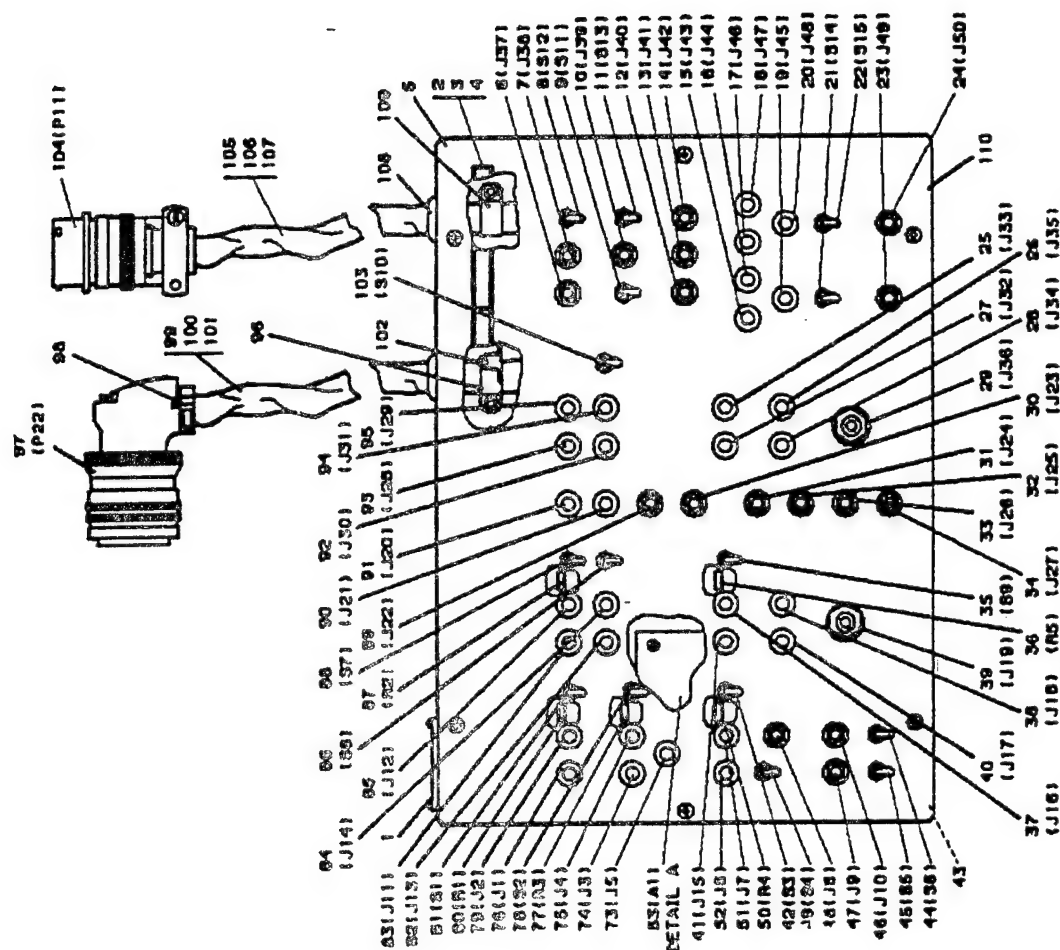


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11.1.3 D001R007



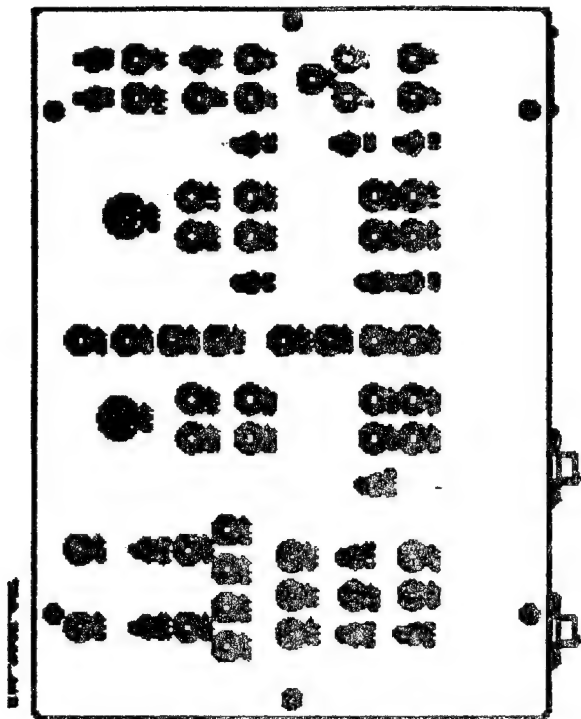
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11.1.4 D001R011

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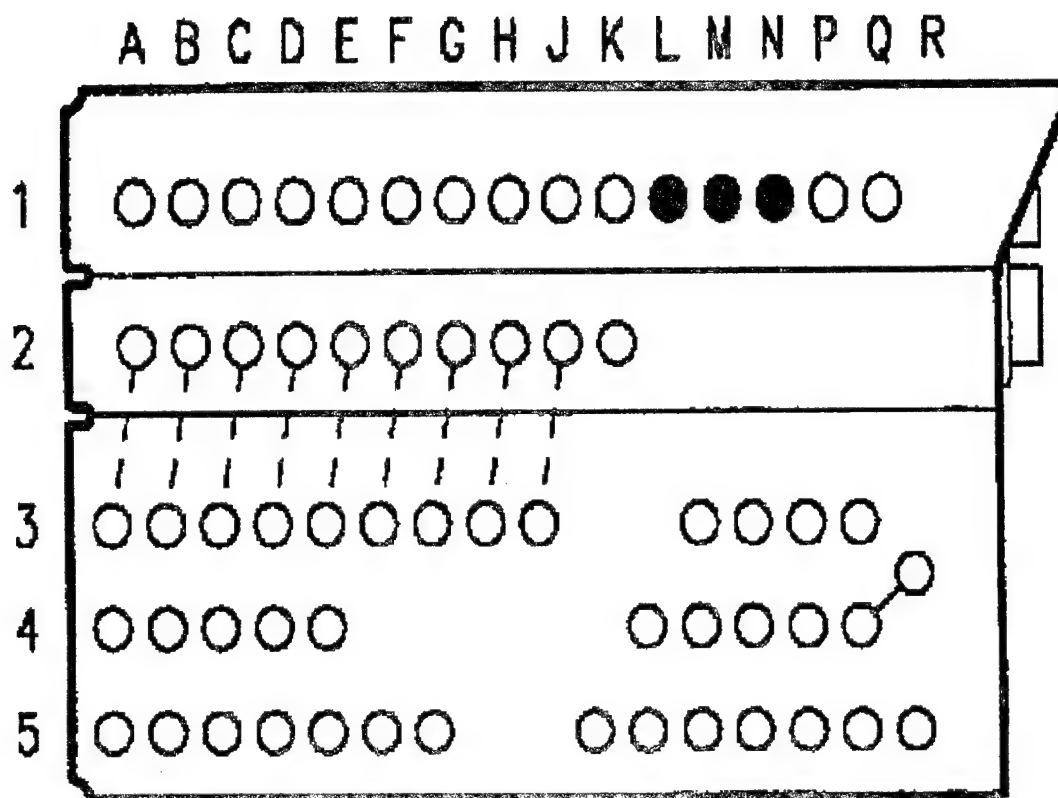
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11.2 Harvard Graphics Hard Copies
11.2.1 D001R001

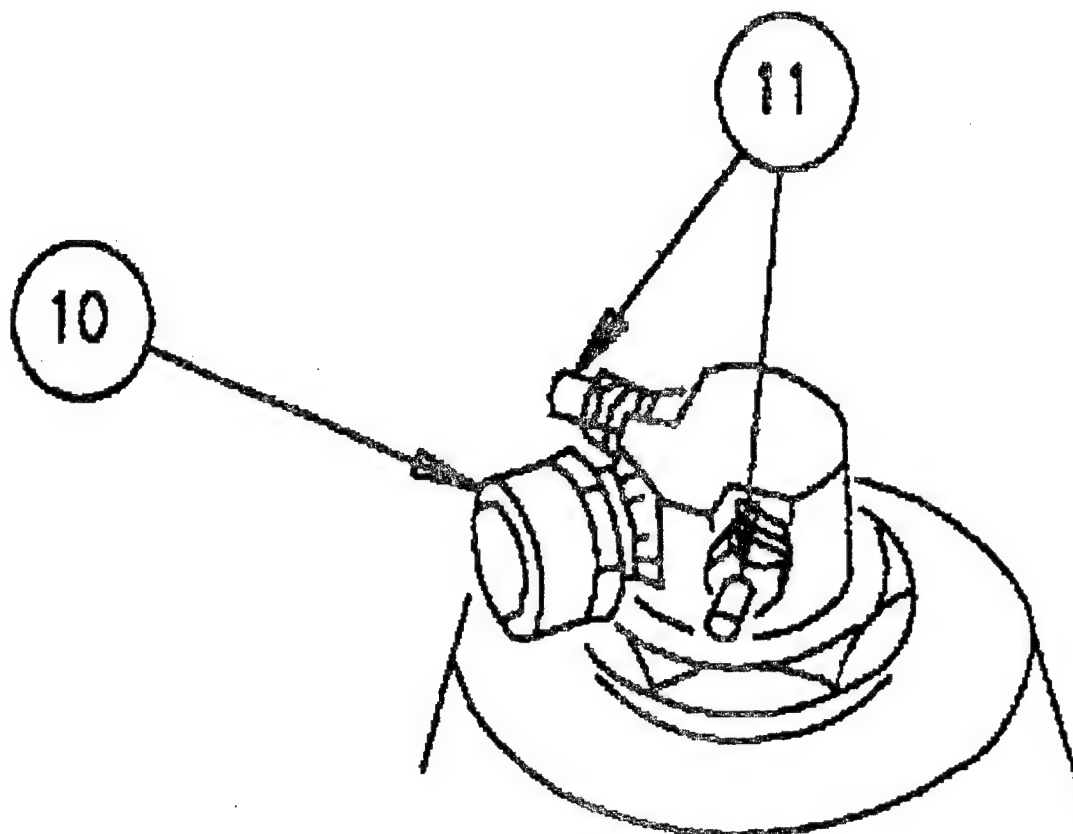


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11.2.2 D001R002



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11.2.3 D001R003

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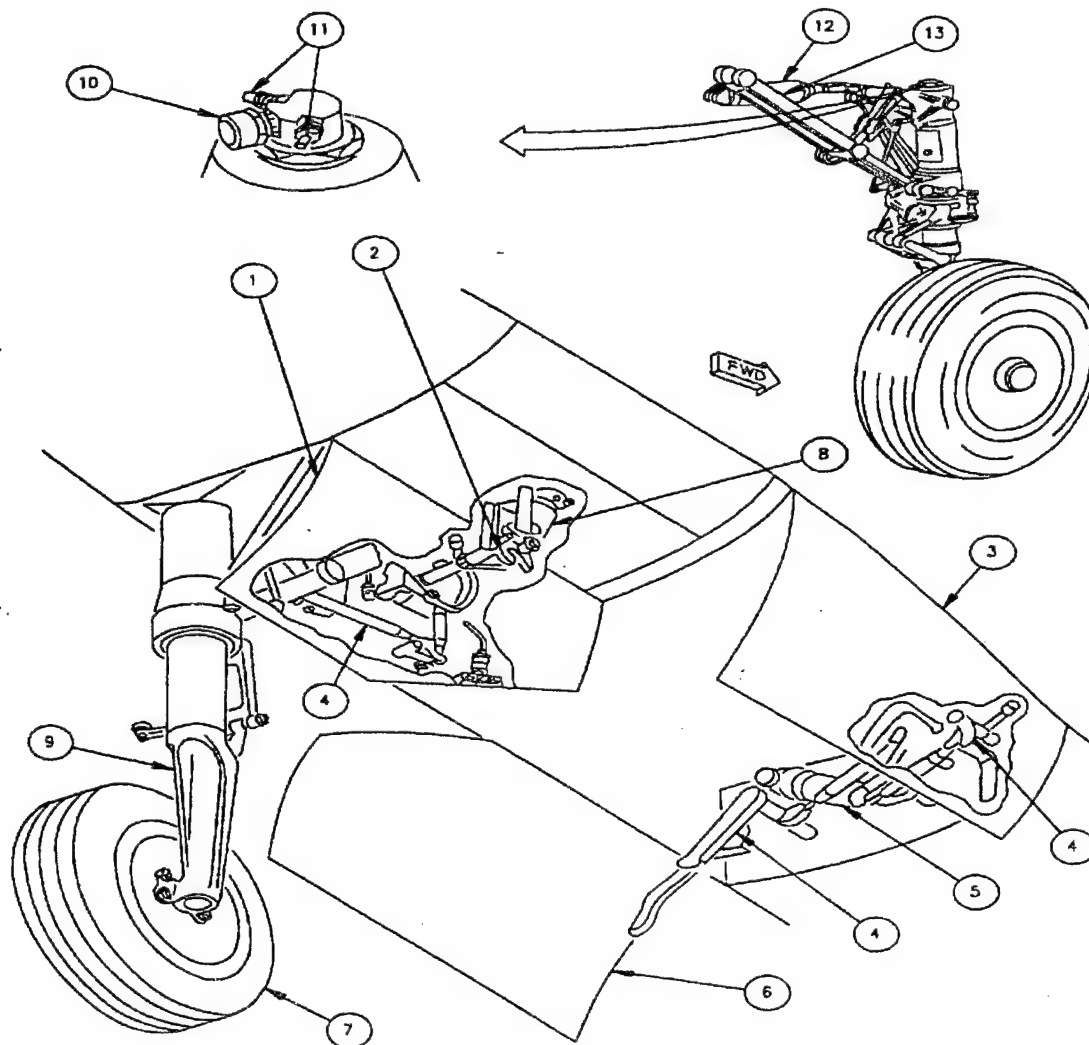
52Z-C007		ESSENTIAL CIRCUIT BREAKER PANEL NO. 1		(24-50-12)
REF DES	ZONE	NOMENCLATURE		BUS
41CBC033	L1	R MLG WOW PWR	28VDC	ESS 28VDC
41CBC034	M1	L MLG WOW PWR	28VDC	ESS 28VDC
42CBC005	N1	LDC GR POS IND	28VDC	ESS 28VDC

Harvard Graphics 3.0
D001R003

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90-05B

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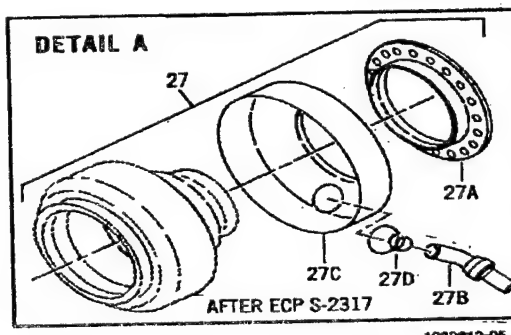
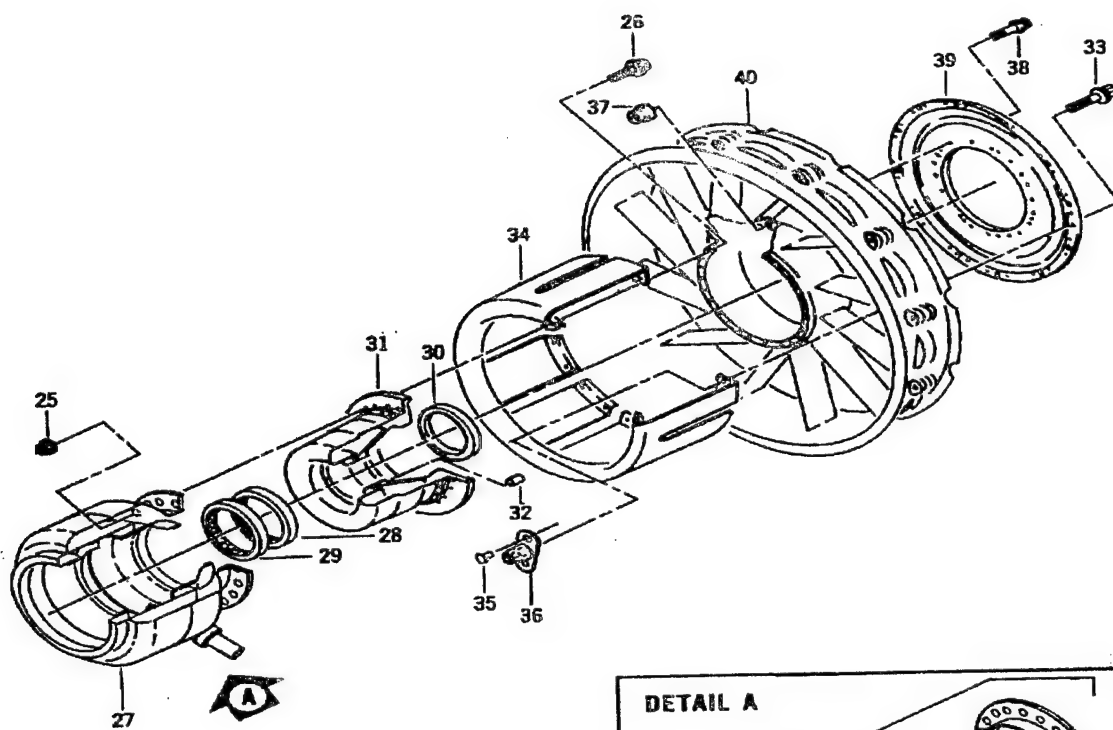


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CTN Test Report
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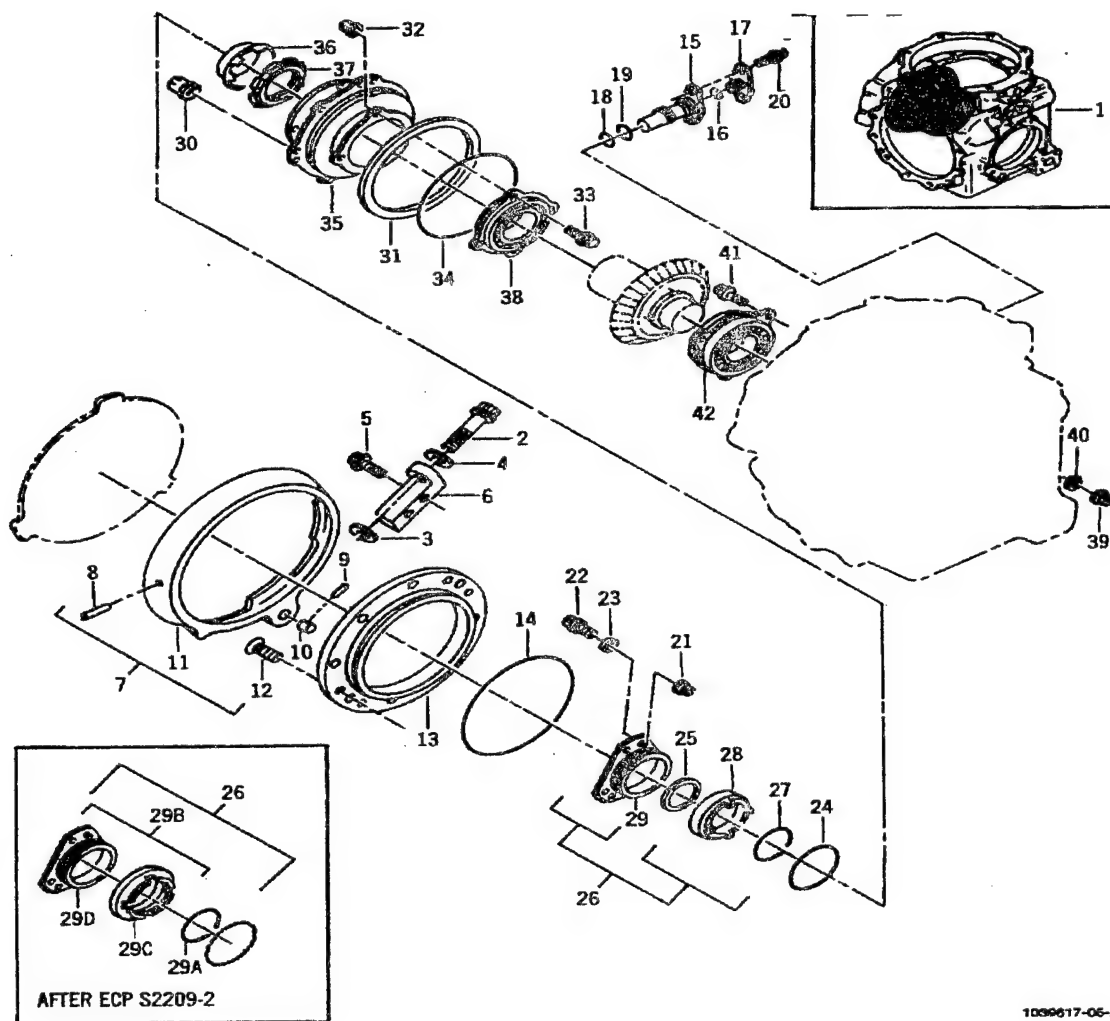


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AFTB Test Report
90-05B

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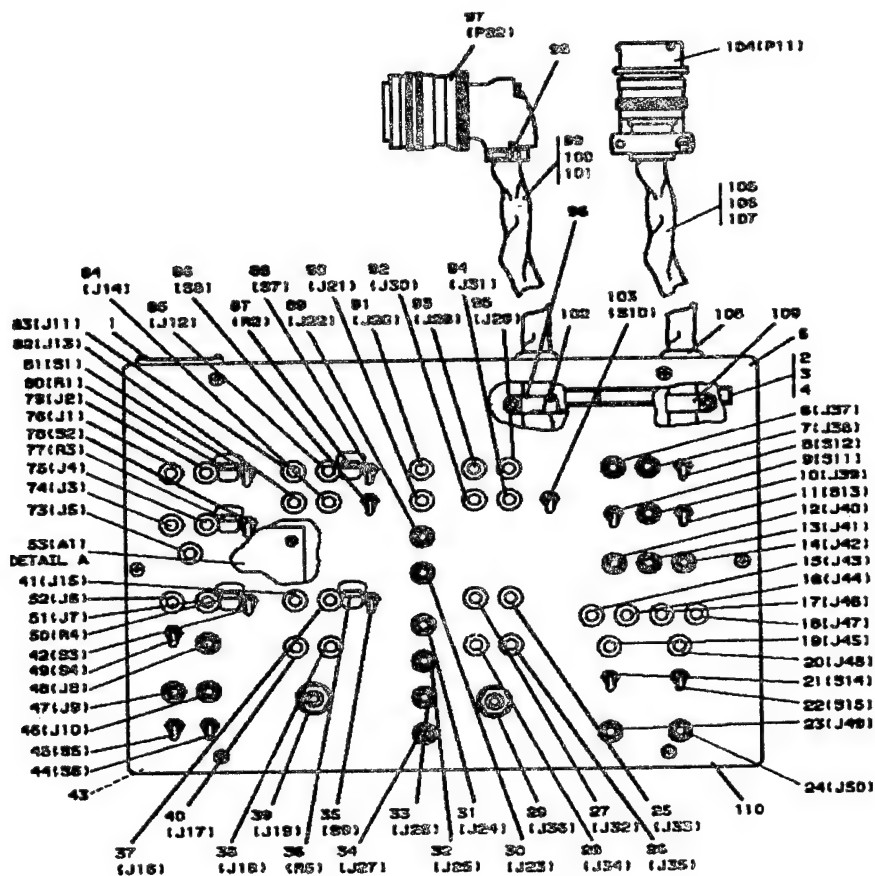
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92-004

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90-05B

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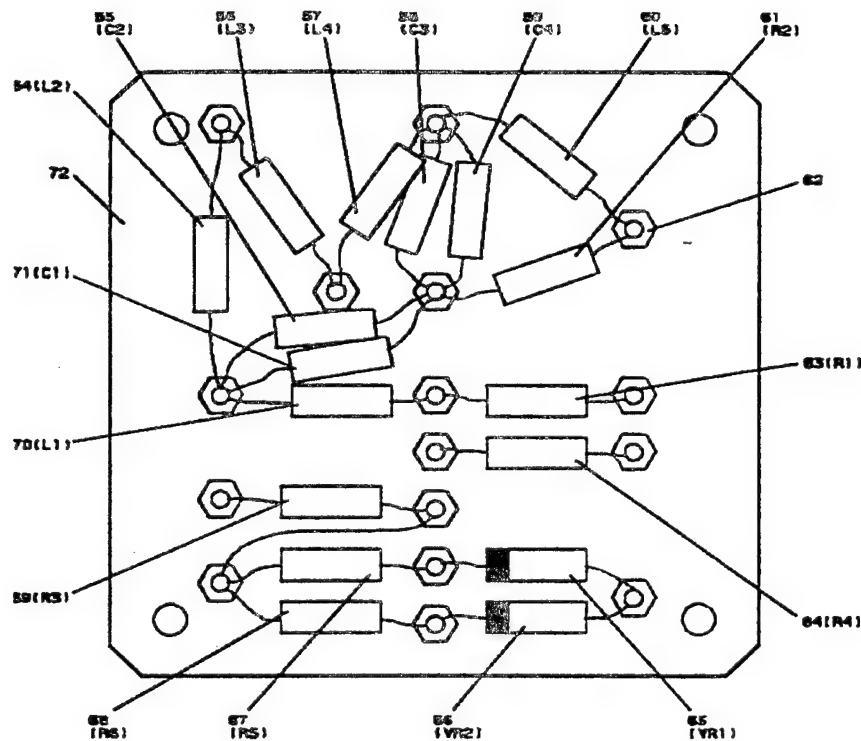
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AFTB Test Report
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DETAIL A

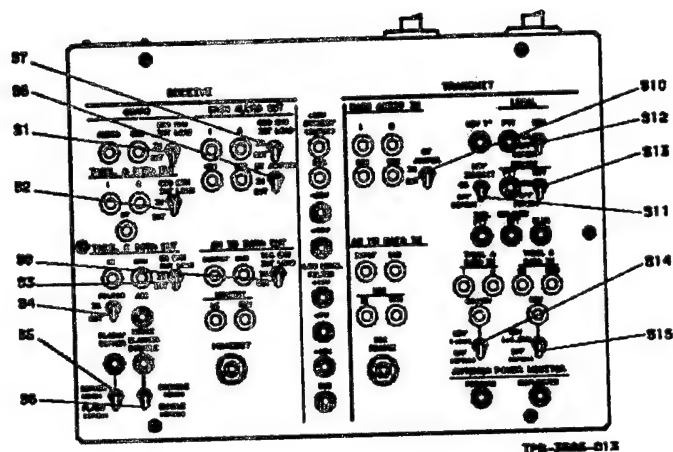
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CTN Test Report
92-004

AFTB Test Report
90-05B

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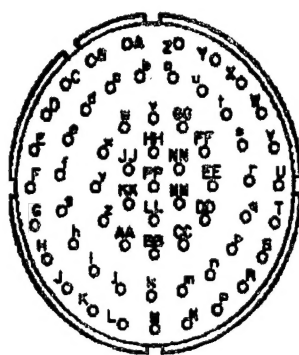


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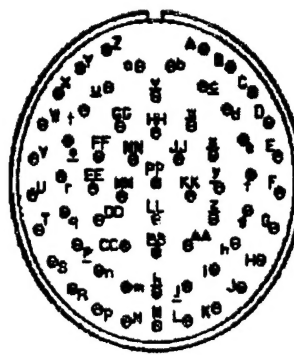
CTN Test Report
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90-05B

11.2.10 D001R010



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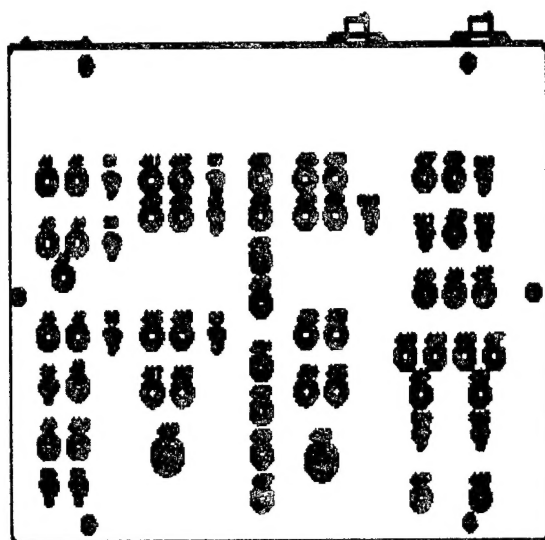


Figure 11

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